

WHAT IS CLAIMED IS:

1. A power generator unit comprising a housing including at least two air inlet openings and at least one outlet opening, an engine disposed at least partially within the housing, a muffler communicating with the engine through an exhaust conduit, a generator driven by the engine and disposed at least partially within the housing, a first fan driven by the engine and disposed on one side of the engine and a second fan driven by the engine and disposed on the other side of the engine, a battery disposed within the housing immediately next to but spaced apart from one of the air inlet openings, an electronic control module communicating with at least one of the engine and generator so as to control at least one operational characteristic of the power generator unit, the electronic control module positioned immediately next to, but spaced apart from the other air intake opening, each intake opening communicating with an interior space within the housing in which air that flows through the one air inlet opening and over the battery merges with air that flows through the other air inlet opening and over the electronic control module, the first fan drawing air from the interior space and communicating with a first air path that extends from the first fan, across at least portions of the exhaust conduit and the muffler, to the air outlet opening, and the second fan drawing air from the interior space and communicating with a second air path that passes across the generator and over at least a portion of the muffler before exiting the outlet opening.

2. The power generator unit of Claim 1, wherein the engine includes a crankcase formed at least in part by a crankcase cover and an output shaft extending through the crankcase cover to couple with the generator, the crankcase cover including a recess that receives at least a portion of the generator.

3. The power generator unit of Claim 2, wherein the crankcase cover includes at least one opening through which the second fan draws cooling air into the crankcase cover and over at least a portion of the generator.

4. The power generator unit of Claim 3, additionally comprising a generator cover encloses the generator inside the crankcase cover and includes at least one opening through which the second fan blows cooling air from the crankcase cover into a muffler housing that surrounds at least a portion of the muffler.

5. The power generator unit of Claim 5, wherein the muffler is mounted to the generator cover.

6. The power generator unit of Claim 6, wherein the muffler housing encloses the muffler and includes at least one opening through which the second fan blows cooling air from the muffler housing through the air outlet opening.

7. The power generator unit of Claim 2, wherein the output shaft is a crankshaft that includes at least one crankpin disposed within the crankcase and a power-take-off end that is disposed outside the crankcase within the recess of the recess of the crankcase cover, the power-take-off end of the crankshaft being directly connected to a rotor of the generator.

8. The power generator unit of Claim 1, wherein the engine has a crankshaft, the first fan is driven off one side of the crankshaft, and the generator is driven off the other side of the crankshaft.

9. The power generator of Claim 1, wherein the first fan is connected to the crankshaft on the side of the engine closest to the air intake openings.

10. The power generator unit of Claim 1, wherein the engine directly drives a flywheel that comprises the first fan.

11. The power generator unit of Claim 1, wherein the air intake openings are disposed on one side of the cover, at least the first fan is arranged to draw in external air through the air intake openings, the engine being disposed downstream of the flywheel, and the outlet opening being disposed downstream of the engine.

12. The power generator of Claim 1, wherein the housing completely encloses the engine and the generator.

13. The power generator unit of Claim 1, wherein the housing includes a bottom portion, and the engine, the generator and the battery are each mounted to the bottom portion of the cover.

14. The power generator unit of Claim 1 additionally comprising a fuel tank disposed at an elevated position relative to the engine with the housing and arranged within the cover to lie next to the electronic control module.

15. The power generator unit of Claim 15, wherein the guide member comprises a protruding surface and an arched surface.

16. The power generator unit of Claim 16, wherein the arched surface of the guide member partially surrounds a rotor of the generator.

17. The power generator unit of Claim 1, wherein the housing includes at least one portion comprising a sound insulating material.

18. A power generator unit comprising a cover having at least a first air intake opening, a second air intake opening, and a discharge opening, an engine including a first body portion that defines, at least in part, a combustion chamber, a second body portion that defines, at least in part, a crankcase chamber and is disposed next to the first body portion, and at least one muffler that receives exhaust gases from the combustion chamber, a generator driven by the engine, the generator being mounted inside a generator housing, at least a first fan and a second fan, each fan driven by the engine, the first and second air intake openings being disposed on one side of the cover, the engine being disposed downstream of the first fan, and the discharge opening being disposed downstream of the engine, whereby a first cooling air path occurs when the engine drives the first fan to draw external air through both air intake openings to cool at least the first body portion of the engine and thence to discharge heated air through the discharge opening, the second air intake opening being disposed relative to the first and second fans such that at least a portion of external air drawn through at least one of the air intake openings passes through air vents located in the generator housing, through the second fan so as to produce a second cooling air path, and exits the cover through the discharge opening, the generator being disposed generally in the second cooling air path.

19. The power generator unit of Claim 18, wherein the generator housing forms, at least in part, the crankcase chamber.

20. The power generator unit of Claim 18, wherein the second fan includes a rotatable blade and the generator housing is disposed around at least a side of the blade that faces away from the engine, the generator housing defining at least one influent opening for the air to enter the second fan, the influent opening being disposed on a side of the generator housing.

21. The power generator unit of Claim 18, wherein the first body portion of the engine includes at least one cooling fin.

22. The power generator unit of Claim 18, wherein the muffler is disposed between the first body portion of the engine and the discharge opening so as to lie in both cooling air paths.

23. The power generator unit of Claim 18, wherein the muffler is offset generally to one side of a rotational axis of the second fan.

24. The power generator unit of Claim 18 additionally comprising an electronic control module communicating with at least one of the engine and generator so as to control at least one operational characteristic of the power generator unit, and the module is disposed between the first air intake opening and the first fan.

25. The power generator unit of Claim 18 additionally comprising a guide member disposed on the generator housing to separate the first cooling air path from the second cooling air path, the guide member being configured to direct cooling air, which has flowed along the first cooling air path; away from the second cooling path and into a space within a housing in which the muffler is housed.